

## DESIGN REVIEW COMMENTS

PROJECT CN02-239-04 Five Points Outlying Field

- |  |  |   |                                      |
|--|--|---|--------------------------------------|
| <input type="checkbox"/> SITE DEV & GEO        | <input type="checkbox"/> MECHANICAL      | <input type="checkbox"/> SAFETY         | <input type="checkbox"/> SYSTEMS ENG |
| <input type="checkbox"/> ENVIR PROT& UTIL      | <input type="checkbox"/> MFG TECHNOLOGY  | <input type="checkbox"/> ADV TECH       | <input type="checkbox"/> VALUE ENG   |
| <input type="checkbox"/> ARCHITECTURAL         | <input type="checkbox"/> ELECTRICAL      | <input type="checkbox"/> ESTIMATING     | <input type="checkbox"/> OTHER       |
| <input checked="" type="checkbox"/> STRUCTURAL | <input type="checkbox"/> INST & CONTROLS | <input type="checkbox"/> SPECIFICATIONS |                                      |

REVIEW Calculation sheets

DATE 2 March 2004

NAME Opichka, Sherene (256) 895-1656

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1		<p>After discussions with the PM and Safety Specialist the spotting charge for the M47 Inert loaded Chemical Bomb is not a realistic concern. These rounds had very sensitive fuzes that would not survive being dropped, therefore only calculations sheets for the Mk23 Practice Bomb and the M38A2 practice bomb are provided.</p>	<p>SEO W</p>
		<p>ACTION CODES      W - WITHDRAWN  A - ACCEPTED/CONCUR    N - NON-CONCUR  D - ACTION DEFERRED    VE - VE POTENTIAL/VEP ATTACHED</p>	

Minimum Separation Distances  
Five Points Outlying Field  
100lb M38A2 Practice Bomb  
2 March 2004

REQUESTED BY: Jerry Kresge  
PREPARED BY: Sherene Opichka

This form shows calculated distances only. It does not constitute approval. Concurrence of CEHNC-OE-S is required to determine the applicable distance for a specific site.

The M38A2 is a round-nosed cylindrical bomb designed to simulate GP bombs. The bomb body is empty. The spotting charge is the M1A1, the M3 and M4 may also be used. These spotting charges contain 3lb of black powder.

In accordance with (IAW) EM 1110-1-4009, the minimum separation distance for unintentional detonations shall be the largest of the maximum fragment range, the K50 ( $50W^{1/3}$  where W is the total net explosive weight for the detonation) overpressure distance or 200 ft. In accordance with (IAW) EM 1110-1-4009, use of the range to no more than 1 hazardous fragment/600 sq ft as the minimum separation distance for unintentional detonations requires written justification, a risk analysis, calculation of this distance by CEHNC-ED-CS-S, and concurrence of CEHNC-OE-S.

IAW EM 1110-1-4009, the minimum separation distance for intentional detonations shall be the largest of the maximum fragment range, the K328 ( $328W^{1/3}$  where W is the total net explosive weight for the detonation) overpressure distance or 200 ft.

#### CALCULATED FRAGMENT DISTANCES

Maximum Fragment Range = 200 ft  
Range to No More Than 1 Hazardous Fragment/600 sq ft = N/A ft

#### CALCULATED OVERPRESSURE DISTANCES BASED ON OE ITEM'S EXPLOSIVE WEIGHT ONLY (i.e. NO DONOR CHARGE)

Range to 0.9 psi Overpressure (K50) = 56 ft  
K328 Overpressure Range = 370 ft (based on munition NEW only, no donor)

The primary fragmentation characteristics used in the calculation of the values listed above were computed IAW CEHNC-ED-CS-S-98-1. The maximum fragment range was calculated using the maximum weight fragment and the initial velocity from these characteristics in the computer software TRAJ. The range to no more than 1 hazardous fragment/600 sq ft was calculated IAW CEHNC-ED-CS-S-98-2.

#### SIGNATURES:

Sherene Opichka 2 March  
Subject Matter Expert Date

Michelle Cull 3/2/04  
QA Reviewer Date

Minimum Separation Distances  
Five Points Outlying Field  
3lb Practice Bomb AN-Mk 23, AN-Mk 43, AN-Mk 5 Mod1, AN-Mk3, AN-Mk 4  
2 March 2004

REQUESTED BY: Jerry Kresge  
PREPARED BY: Sherene Opichka

**This form shows calculated distances only. It does not constitute approval. Concurrence of CEHNC-OE-S is required to determine the applicable distance for a specific site.**

In accordance with (IAW) EM 1110-1-4009, the minimum separation distance for unintentional detonations shall be the largest of the maximum fragment range, the K50 ( $50W^{1/3}$  where W is the total net explosive weight for the detonation) overpressure distance or 200 ft. In accordance with (IAW) EM 1110-1-4009, use of the range to no more than 1 hazardous fragment/600 sq ft as the minimum separation distance for unintentional detonations requires written justification, a risk analysis, calculation of this distance by CEHNC-ED-CS-S, and concurrence of CEHNC-OE-S.

IAW EM 1110-1-4009, the minimum separation distance for intentional detonations shall be the largest of the maximum fragment range, the K328 ( $328W^{1/3}$  where W is the total net explosive weight for the detonation) overpressure distance or 200 ft.

NAVWEPS OP 2216 describes this round as a 10-gage shotgun shell of extra length. It contains an expelling charge of smokeless powder and is primed with commercial primer. A pyrotechnic or inert marker load is separated from the expelling charge by a disc and cardboard gun-wad. The end of the shell is closed by felt gun-wads which are secured by a cemented cover.

#### CALCULATED FRAGMENT DISTANCES

Maximum Fragment Range = N/A ft  
Range to No More Than 1 Hazardous Fragment/600 sq ft = N/A ft

#### CALCULATED OVERPRESSURE DISTANCES BASED ON OE ITEM'S EXPLOSIVE WEIGHT ONLY (i.e. NO DONOR CHARGE)

Range to 0.9 psi Overpressure (K50) = 12 ft  
K328 Overpressure Range = 77 ft (based on munition NEW only, no donor)

The primary fragmentation characteristics used in the calculation of the values listed above were computed IAW DDESB Technical Paper 16. The maximum fragment range was calculated using the maximum weight fragment and the initial velocity from these characteristics in the computer software TRAJ. The range to no more than 1 hazardous fragment/600 sq ft was calculated IAW DDESB Technical Paper 16.

#### SIGNATURES:

Sherene Opichka 2 Mar 04  
Subject Matter Expert Date

Michelle Cull 3/2/04  
QA Reviewer Date

## DESIGN REVIEW COMMENTS

PROJECT CN 02-239-04, Five Points Outlying Field, MSD Calculations

- |   |  |  |                                      |
|---|--|--|--------------------------------------|
| <input type="checkbox"/> SITE DEV & GEO   | <input type="checkbox"/> MECHANICAL      | <input type="checkbox"/> SAFETY              | <input type="checkbox"/> SYSTEMS ENG |
| <input type="checkbox"/> ENVIR PROT& UTIL | <input type="checkbox"/> MFG TECHNOLOGY  | <input checked="" type="checkbox"/> ADV TECH | <input type="checkbox"/> VALUE ENG   |
| <input type="checkbox"/> ARCHITECTURAL    | <input type="checkbox"/> ELECTRICAL      | <input type="checkbox"/> ESTIMATING          | <input type="checkbox"/> OTHER       |
| <input type="checkbox"/> STRUCTURAL       | <input type="checkbox"/> INST & CONTROLS | <input type="checkbox"/> SPECIFICATIONS      |                                      |

REVIEW MSD Calculations  
 DATE 2 March 2004  
 NAME Michelle Crull, PhD, PE (256) 895-1653

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1		Researched M47 chemical bomb. The only historical evidence of this bomb on this site is pieces that obviously came from a sand or water filled bomb. There was no evidence of a fuze or spotting charge. The fuze that was used on the M47 was highly sensitive (activated from a drop of 6 ft) and, when filled with chemicals, the M47 leaked. From information I was able to gather about this bomb at this site, I do not believe it needs to be considered as a possible explosive item. It is certainly not the MGFD.	
2		Performed a QC on the MSD calculations done by Sherene Opichka.	
ACTION CODES      W - WITHDRAWN A - ACCEPTED/CONCUR    N - NON-CONCUR D - ACTION DEFERRED    VE - VE POTENTIAL/VEP ATTACHED			



DEPARTMENT OF THE ARMY  
HUNTSVILLE CENTER, CORPS OF ENGINEERS  
P.O. BOX 1600  
HUNTSVILLE, ALABAMA 35807-4301

REPLY TO  
ATTENTION OF:

August 16, 2004

Design Center for Ordnance  
and Explosives Directorate

SUBJECT: Contract DACA87-00-D-0035, Task Order 18; Request for Waiver to Reduce Minimum Separation Distance for Unintentional Detonations at the Five Points Out Lying Field Ordnance and Explosives Removal Action, Arlington, TX

Mr. Douglas B. Goehring, Project Manager  
American Technologies Inc.  
142 Fairbanks Rd.  
Oak Ridge, TN 37830

Dear Mr. Goehring:

References:

- a. Engineer Manual (EM) 1110-1-4009, Ordnance and Explosives (OE) Response, June 23, 2000.
- b. Memorandum, CEHNC-DE, March 9, 2004, subject: Delegation of Authority.
- c. Minimum Separation Distances, Five Points Outlying Field; 3lb Practice Bomb AN-Mk-23, AN-Mk 43, AN-Mk 5 Mod 1, AN-Mk 3, and AN-Mk 4, and dated 2 March 2004
- d. ATI letter, Request for Waiver to Reduce Minimum Separation Distance for the Former Five Points Outlying Field Ordnance and Explosives Removal Action, Arlington, TX and dated July 22, 2004.

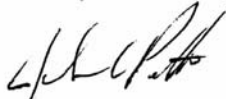
American Technologies, Inc requests a waiver to reference a, paragraph 11-7. Paragraph 11-7 requires a minimum separation distance for unintentional detonations to be the greater of overpressure at K value of 50, the maximum fragmentation range or 200 feet. Reference c. provides calculations showing the over pressure (K50) equals 12 feet and the fragmentation distance is N/A.

The OE Project Manager (OE-DC) recommends the waiver be approved as requested in reference d.

The authority to grant a waiver of this nature is provided in reference b.

If you have any questions or concerns, please contact the OE Project Manager, Jerry Kresge at 256-895-1158.

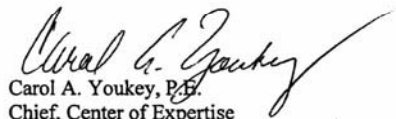
Sincerely,



John C. Potter, PhD, P.E.  
Chief, Design Center  
for Ordnance and Explosives  
Directorate

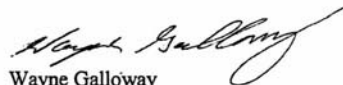
Enclosure

Concur ☒ Nonconcur ☐



Carol A. Youkey, P.E.  
Chief, Center of Expertise  
for Ordnance and Explosives  
Directorate

Concur ☒ Nonconcur ☐

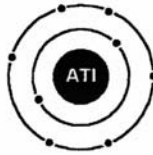


Wayne Galloway  
Chief, OE Safety Group  
for Ordnance and Explosives  
Directorate

Approved ☒ Disapproved ☐



C. David Douthat, P.E. CSP  
Director, Ordnance and  
Explosives Directorate



## AMERICAN TECHNOLOGIES, INC.

142 Fairbanks Road ♦ Oak Ridge, TN 37830  
(865) 481-4844 ♦ FAX (865) 481-4850 ♦  
www.atincorporated.com

July 22, 2004

U.S. Army Engineering and  
Support Center, Huntsville  
ATTN: Chief OE-CX  
P.O. Box 1600  
Huntsville, AL 35807

SUBJECT: Request for waiver to reduce minimum separation distance for the former  
Five Points Outlying Field Ordnance and Explosives removal action, Arlington, TX.

ATTN: Chief, Ordnance and Explosives Center of Expertise

Reference EM 1110-1-4009

Request the Minimum Separation Distance (MSD) for unintentional detonations at the  
Former Five Points Outlying Field removal action be reduced to 12 feet. The current  
MSD of 200 feet will make the entire project all but impossible to perform due to the fact  
that as many as 30 homes would need to be evacuated at any one time. In addition, given  
the small size of the working grids (individual properties) the MSD will be in almost  
continual movement increasing the daily total of possible evacuations.

According to EM 1110-1-4009, the MSD for unintentional detonations is the greater of  
the K50 distance, the fragmentation distance or 200 feet. For the former Five Points  
Outlying Field, the Most Probable Munition (MPM) is the Mk 23 three pound practice  
bomb that has no fragmentation distance and a K50 of 12 feet. Since there is no  
fragmentation hazard during excavations, I recommend that the MSD for unintentional  
detonations be reduced to 12 feet. This distance is based upon maintaining a safe and  
acceptable MSD without including the residence in the MSD and is equal to the K50  
distance.

Your assistance in this matter is greatly appreciated.

Sincerely,

Douglas B. Goehring  
Project Manager